



Florida Keys National Marine Sanctuary

INTRODUCTION



Courtesy of Mike White, Florida Keys National Marine Sanctuary

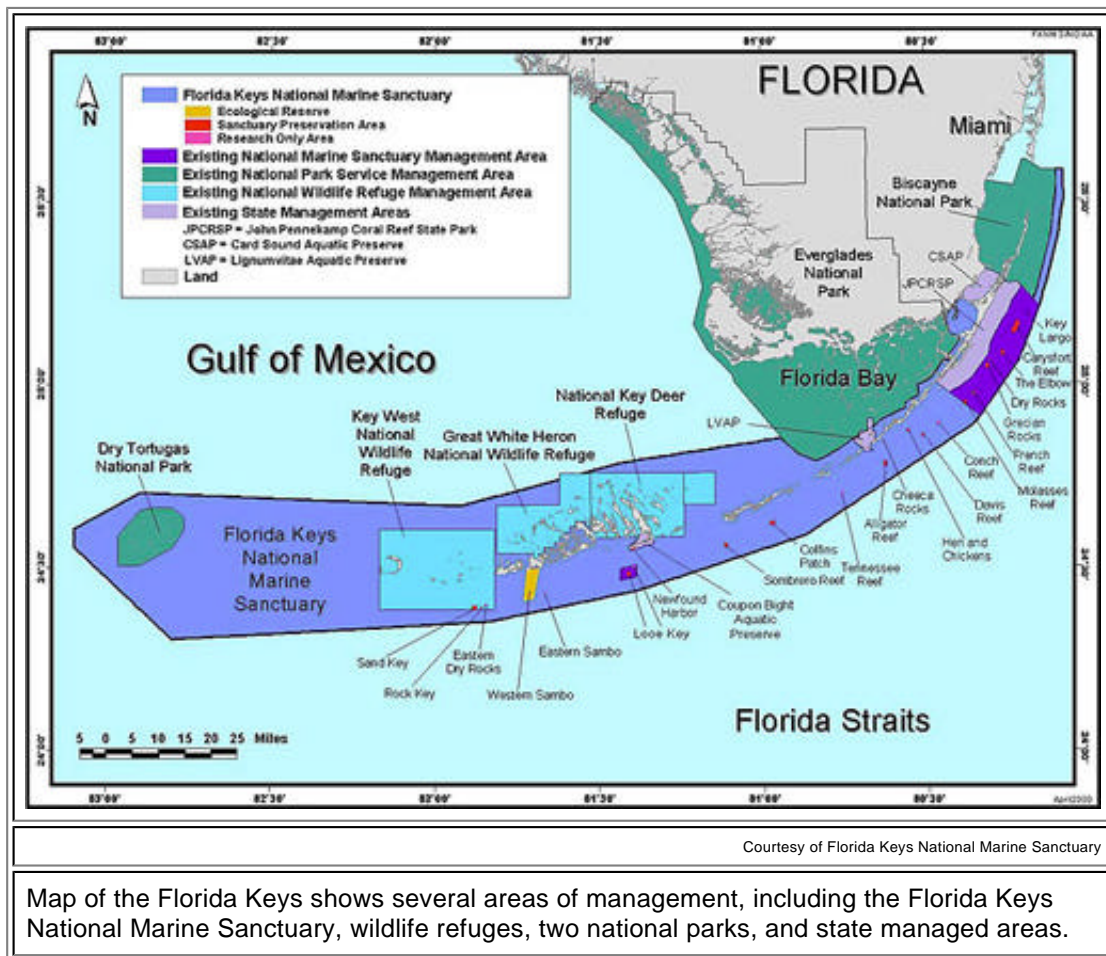
Coral reefs have been called the rain forest of the oceans because of the abundance and diversity of life found there.

Off the tip of Florida is an archipelago of 1700 islands called the Florida Keys. This island chain is a [coral reef](#) that begins at the tip of Florida, just south of Key Biscayne and curves southwest for 202 kilometers (126 miles). It ends 145 kilometers (90 miles) north of Cuba.

Many of the islands are too small for people to live on. Surrounding the keys is Florida Keys National Marine Sanctuary. This marine sanctuary covers 9600 square kilometers (2800 square nautical miles). It is the closest federally protected coral reef to the continental United States. The reefs of Florida Keys National Marine Sanctuary form the only living coral barrier reef in North America. It is the third largest system of coral reefs in the world. Only the Great Barrier Reef of Australia and barrier reefs off Belize are larger. The warm clear water ranges in depth from 0.6 to 610 meters (2 to 2000 feet) with an average of 15.25 meters (50 feet).

The ocean currents that pass through the Florida Keys connect with the Gulf Stream and major shipping routes along the Atlantic seaboard. The reefs are littered with ships washed onto the shallow reefs by hurricanes, sudden tropical storms, or navigation errors. Ships grounded on reefs break apart and are scattered by waves. Since the 1500s, over 800 wrecks have been recorded. In the early 1900s most of the wrecks were salvaged, and today little evidence remains.

In 1957, a group of scientists and conservationists held a meeting in the Florida Everglades to discuss the state of the keys. They were worried that the crowds of visitors often damaged the coral and were destroying the reefs. This meeting resulted in the founding of the world's first underwater park, the John Pennekamp Coral Reef State Park, in 1960.



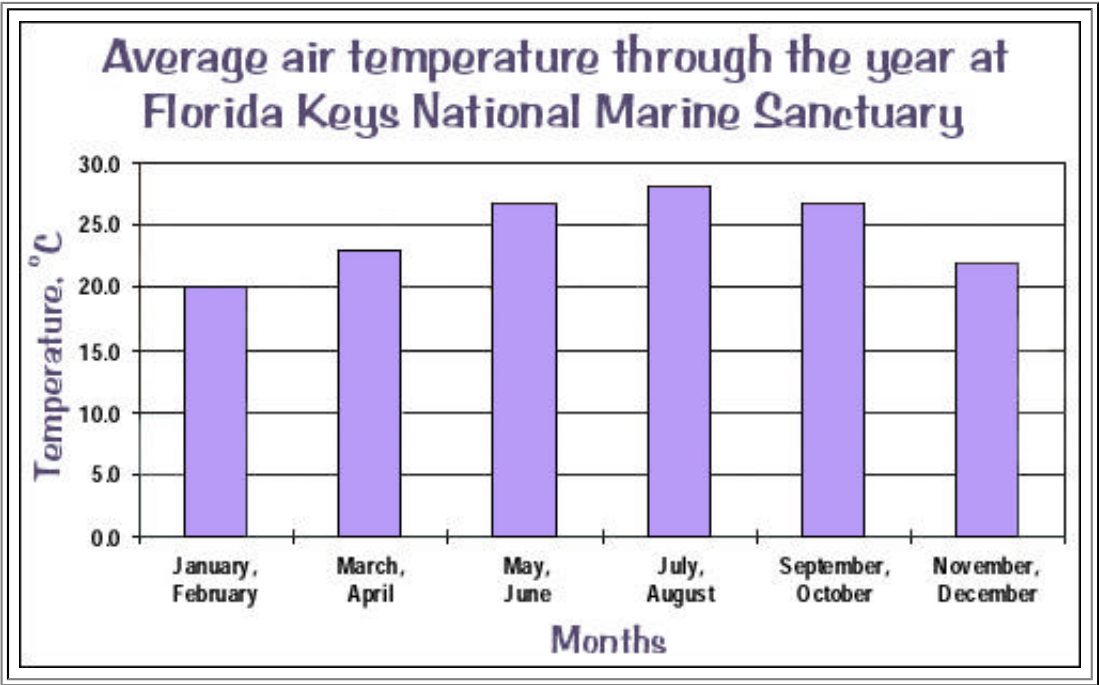
Problems like pollution and overharvesting of sea life also threatened this ecosystem. The coral reefs could be better managed and monitored if they were included within a state or national refuge or park. The creation of the National Marine Sanctuary System in 1972 helped protect the special ecological, historical, and recreational resources of unique ocean habitats. Two areas of the Florida Keys were designated as sanctuaries, one in 1975 and another in 1981. These areas, together with the waters surrounding the entire Florida Keys, became Florida

Keys National Marine Sanctuary on November 15, 1990.

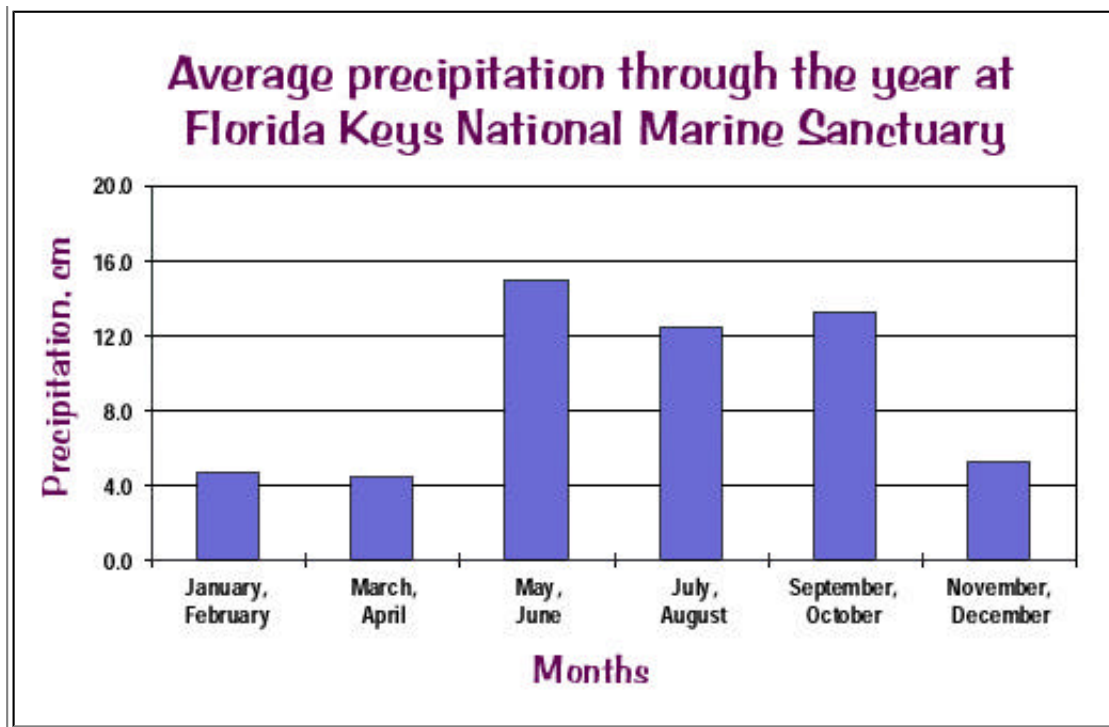
The reefs of Florida Keys National Marine Sanctuary are biologically diverse and productive. Coral reefs are called the rain forests of the ocean because of the diversity of organisms found there. The core of a reef is composed of the calcareous skeleton of the [coral polyp](#). The area around the the colonial corals provides habitat for [calcareous algae](#), fish, worms, and other marine organisms. The coral reefs are the dominant feature here. The Florida Keys also have beds of [turtle grass](#) and [mangrove](#) forests. All these communities provide important habitat for marine fish and other animals.

ABIOTIC DATA

Florida Keys National Marine Sanctuary is a [tropical ocean](#) with a tropical maritime climate. There are two long seasons. May to October is the wet season, with an average of 14 centimeters (5.5 inches) of rain each month. Average temperatures during the wet season are hot, around 27°C (80°F), and average relative humidity is 75%. The water temperature during the summer months also averages 27°C (80°F).



The dry season is November to April. While there are occasional cold fronts and rain, only about 5 centimeters (2 inches) of precipitation falls each month. Cooler temperatures range between 20 and 24°C (68 and 75°F).



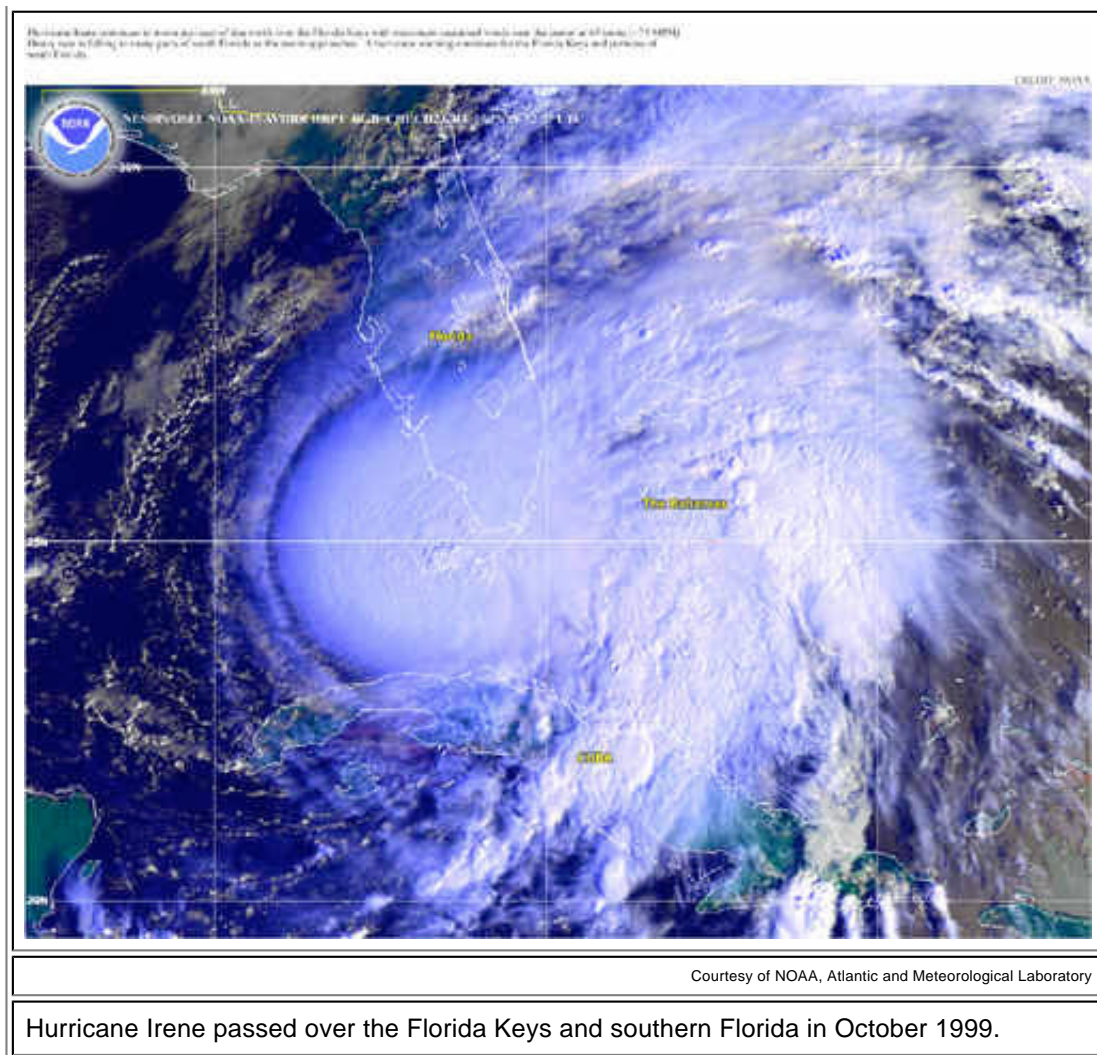
The Florida Keys receive fairly direct sunlight throughout most of the year. Sunlight penetrates ocean water to about 80 meters (260 feet). This lighted layer is called the photic zone. Much of the water in the Keys, which has an average depth of 15.25 meters (50 feet), is entirely in the photic zone. Sunlight penetrates the water and reflects off the the white sands in the shallow seas. Warm water and ample sunlight provide an ideal habitat for photosynthetic organisms. [Corals](#) live only in the photic zone.

Farther from shore the water is much deeper, up to 610 meters (2000 feet). The deeper water is the aphotic zone. It is dark from about 80 meters (260 feet) to the ocean floor. The ocean floor is littered with debris broken from the reef.



Barrier reefs like those in the Florida Keys are obstacles to ocean waves. Behind the reef is an area of calm, warm, shallow water called a lagoon. Lagoons are important habitats for juvenile fish and organisms that cannot tolerate the open ocean or turbulent reef.

Between June 1 and November 30 each year there is a 13–16% probability of a hurricane in the Florida Keys. Hurricanes form in zones of low air pressure off the west coast of Africa. Air currents direct them toward the Caribbean and the east coast of North America. Hurricane winds and high waves damage reefs by breaking branching coral and displacing many organisms. The most serious damage, however, is the result of fine sediment stirred up into the water. It reduces the sunlight in the water. Fine sediment that settles on [coral polyps](#) can also smother them. Recent hurricanes that passed through the Florida Keys include Hurricane Andrew in 1992, Hurricane Georges in 1998, and Hurricane Irene in 1999.



Even though the Florida Keys National Marine Sanctuary is so large and productive, it does not have as much coral coverage as other coral reefs. Many of the corals here are at the edge of their range of temperature tolerance. They would be unable to live even a little farther north. They can live here only because currents from the south bring warm water year-round, and the tropical marine climate area keeps the air warm and humid.

The sanctuary is near the Gulf Stream, which is a strong northward current. The Loop Current of the Gulf of Mexico and the Florida Current both merge with the Gulf Stream, bringing with them warm water from the Caribbean, South America, and Florida Bay. The convergence of these currents creates large, spinning, counterclockwise eddies in the ocean called gyres.

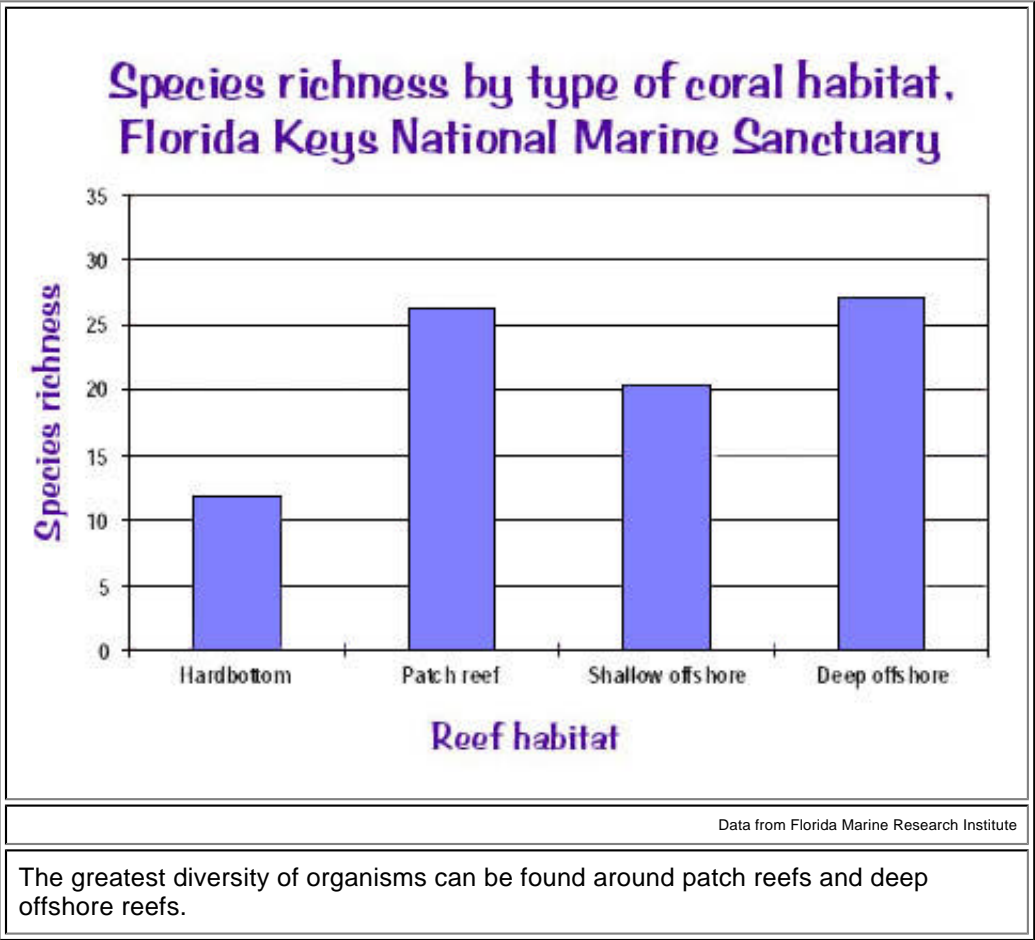
The water of the Florida Keys has salinity ranging between 3.3 and 3.6%. Average ocean water is 3.5%. Salinity increases when there are dry conditions in south Florida. Low amounts of rain and runoff mean less water to dilute the concentration of salt in the ocean. Evaporation further concentrates the salt, and the salinity increases.

In general, water in tropical regions such as Florida Keys National Marine Sanctuary is nutrient poor. Runoff from land, both residential and agricultural, can increase the concentration of nutrients present, and can carry pollutants.


BIOTIC DATA

The core of a coral reef is a buildup of skeletal material of the [coral polyp](#). Coral polyps are tiny, soft, sea anemone-like animals that build a cup of calcium carbonate around themselves for protection. Thousands of these tiny polyps build their skeletons together in a colony. The colony continually builds on old skeletons and can over time become

hundreds of meters tall.



There are four main types of coral habitat in Florida Keys National Marine Sanctuary: hardbottom, patch reef, shallow offshore reef, and deep offshore reef. The hardbottom area is dominated by soft corals, such as [sea fans](#), with a sandy substrate. A patch reef is a tall mound of coral dominated by massive corals, like brain coral. A higher diversity of organisms is found here. Shallow offshore reefs are found in zones of high-energy water. These are usually the barrier reefs. They are dominated by branching corals, such as [staghorn](#) and elkhorn corals. The deep offshore reefs are dominated by the massive corals and bottom-dwelling organisms.

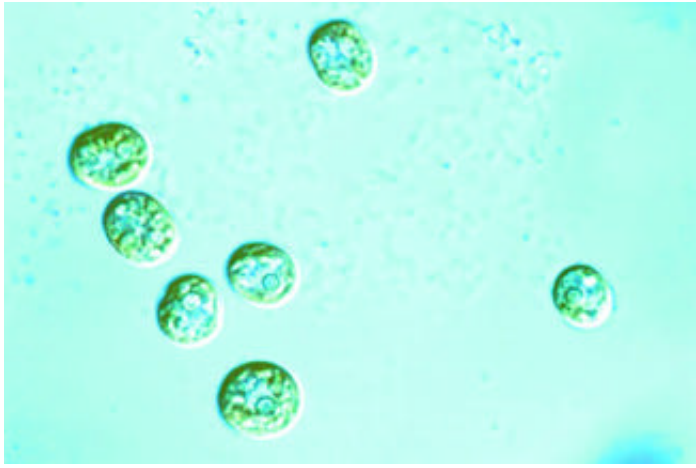



Courtesy of Mike White, Florida Keys National Marine Sanctuary



A variety of organisms around a coral reef provides sheleter and food.

[Coral](#) provides the habitat for the other organisms that live there. The large coral heads provide a hard substrate for soft corals, such as [sea fans](#), sea whips, and [sponges](#), to attach. [Christmas tree worms](#) burrow into the coral skeleton. These animals are filter feeders, gathering food from the water that passes over or through their bodies. Christmas tree worms have special feathery structures they use to capture food. Sea fans, a non–reef-building coral, catch food with their tiny tentacles.

Coral polyps also receive food from photosynthetic algae, [zooxanthellae](#), that live in its tissues. The corals benefit from the food and oxygen the zooxanthellae produce. A mutually beneficial relationship like this is called symbiosis. Zooxanthellae also give the corals their bright colors. Living among the corals are other photosynthetic algae. Warm, clear water in the photic zone is essential for the survival of these organisms.

	
Courtesy of William Fitt, University of Georgia	Courtesy of Florida Keys National Marine Sanctuary
Zooxanthellae live within the tissue of coral polyps and produce food through photosynthesis for themselves and the coral.	Each bump on this branch of staghorn coral contains a coral polyp.

Animals graze on the coral polyps and [algae](#) throughout the reef. [Flamingo tongue snails](#) have a scraping tongue they use to feed on the [sea fan](#) polyps. [Parrot fish](#) feed by scraping the top of the coral with their strong teeth. They digest the polyp and the skeleton that is scraped up passes through the parrot fish's digestive tract unchanged. It is excreted and add to the sand surrounding the reef. [Angelfish](#) feed exclusively on sponge, and [three-spot damselfish](#) groom patches of algae that they eat.

	
Courtesy of Florida Keys National Marine Sanctuary	Courtesy of Florida Keys National Marine Sanctuary
Parrot fish use bony teeth to scrape off coral polyps.	Schoolmasters and striped grunts move in large schools for protection.

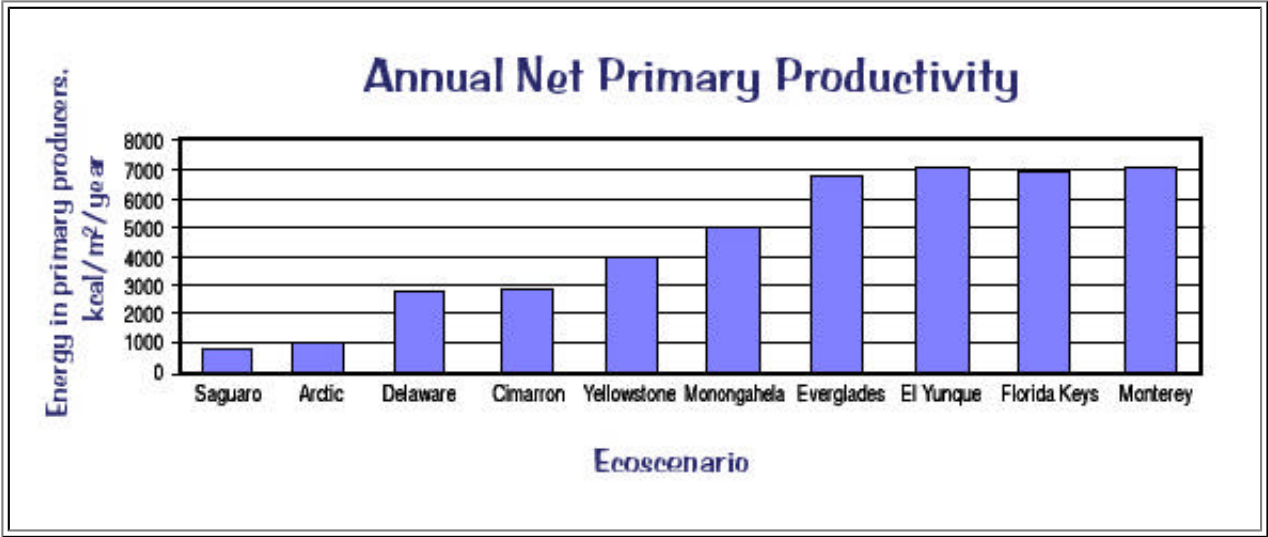
Fish of all sizes, shapes, and colors can be found darting around the reef. Some large schools of fish, such as [sergeant majors](#) and [schoolmasters](#), can be seen searching for food. They swim and turn as if they are one large fish. [Barracudas](#) hover motionless and wait for prey to come to them.

During the day, [spiny lobsters](#) and [long-spined black urchins](#) hide in the reef. At night they come out to feed. The urchin dines on turtle grass and algae. The spiny lobster eats detritus, worms, sea urchins, and most anything that comes within its reach.

Fish living around coral reefs come in a wide variety of colors. Some, such as the [three-spot damselfish](#), have different color phases from juvenile to adult. Color phases help the fish blend in with its surroundings and hide from predators. [Nassau groupers](#) can change color quickly to camouflage themselves.

	
Courtesy of Florida Keys National Marine Sanctuary	Courtesy of Homer Montgomery, University of Texas at Dallas
A southern stingray swims close to the bottom, looking for food. The stingray's mouth is on the underside of its body.	Calcareous green algae have rootlike structures called holdfasts that anchor them to the sandy lagoon bottom.

Between the barrier reef and the shoreline are lagoons, with calm water and sandy bottom. The lagoon bottom is usually covered with turtle grass and [calcareous green algae](#). Juvenile fish that cannot tolerate the waves of the barrier reef live here. Bottom dwellers such as the [southern stingray](#) and [gulf flounder](#) settle into the sand to feed. Stingrays may look vicious, but are dangerous to humans only if you step on them.

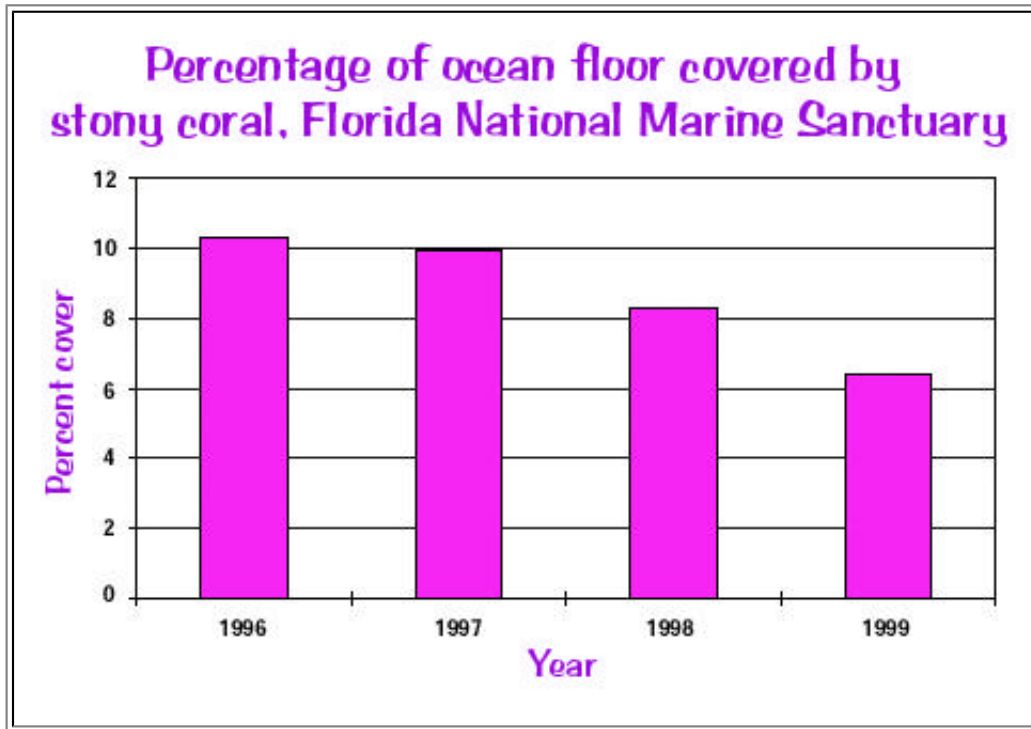


Annual productivity, or the amount of energy provided by the producers in this ecosystem, is very high—about 6750 kilocalories/square meter/year primary production from plants and algae. Coral reefs are often compared to tropical rain forests, because both support highly diverse life and are susceptible to damage from human activities because they are fragile. These systems both have a high economic value if properly conserved.

ISSUES




A major issue for Florida Keys National Marine Sanctuary, and for coral reefs worldwide, is the death and destruction of corals. This loss of coral reef habitat is due to disease, overfishing, careless recreational use, and a

phenomenon called coral bleaching.



What is happening to the coral reefs?

Maintaining the health of coral reefs is important for many reasons. They are some of the most productive and diverse ecosystems on Earth. One-quarter of all marine species are found in coral reefs. Reefs are a major source of income and food for many of the world's people. For instance, the reefs of Florida Keys National Marine Sanctuary support diving and fishing industries, both of which are important to tourists visiting the area. Organisms of the coral reefs are being studied as possible sources for new medicines. The reef structures buffer the land from destructive storms. The reefs are important in the nutrient and gas cycles. Of all the calcium flowing into the world's oceans each year, half is captured by coral-reef organisms. All these factors depend on a healthy and diverse coral ecosystem.

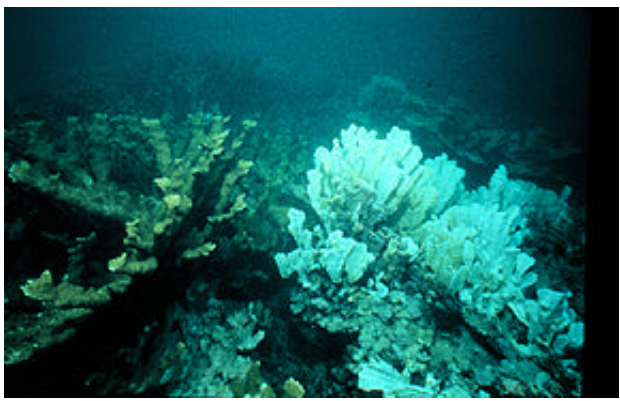

		
Courtesy of William Harrigan, Florida Keys National Marine Sanctuary	Courtesy of Florida Keys National Marine Sanctuary	Courtesy of William Harrigan, Florida Keys National Marine Sanctuary
Careless snorkelers can damage and break fragile coral by standing on or leaning against the reef.	Signs posted near popular snorkeling sites, dive boats, and piers remind divers to be careful near coral.	Even a light touch can destroy the soft-bodied coral polyps living in their hard skeletons.

Divers and snorkelers are drawn to the beauty and diversity of coral reefs worldwide. The climate and location is perfect for many recreational activities that humans seek. Warm, shallow water is ideal for swimming, snorkeling, diving, fishing, and boating. Many casual visitors are not aware of the dangers that these activities pose for the ecosystem.

	
Courtesy of Harold Hudson, Florida Keys National Marine Sanctuary	Courtesy of Paige Gill, Florida Keys National Marine Sanctuary
A motorboat prop can tear up sea grasses in shallow lagoons.	A diver inspects the damage caused by a boat's keel grounded on a reef.


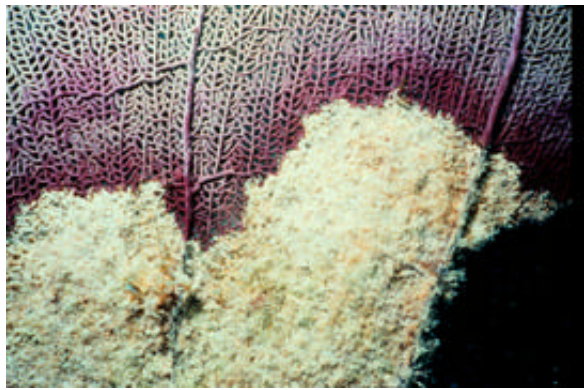
Coral reef ecosystems have survived changes in sea level, ice ages, and periods of mass extinction on land. However, the current rate of damage is a serious global threat to coral reefs. Over one-half of the world's reefs are at high or moderate risk from human disturbance. A result of this disturbance is damage or death of the corals. This often leads to a syndrome where corals become diseased or bleached.

In the 1980s, people noticed widespread damage and bleaching of coral reefs. This occurred not only in places with lots of human traffic, but in undisturbed areas. Some coral reefs showed extensive damage. In the Indian Ocean 90% were damaged in a single year. In the Caribbean the reefs have the lowest total cover of living coral.

	
Courtesy of Florida Keys National Marine Sanctuary	Courtesy of John Halas, Florida Keys National Marine Sanctuary
Healthy elkhorn coral, left, next to a bleached coral	Bleaching across the top of a brain coral

What is killing the coral reefs?

[Corals](#) live in a symbiotic relationship with [zooxanthellae](#), photosynthetic algae. The two organisms depend on each other for survival. The coral uses energy and oxygen produced by the algae, and the algae have a place to live within the coral. Under certain conditions, such as when the water temperature increases or when the water becomes very saline, the coral expel the algae that live inside them. As a result, they lose the color the algae give them. Their white calcium skeletons show through their transparent bodies. This is coral bleaching. The coral can live only a short time without their symbiotic algae. The most severe coral bleaching ever recorded occurred in 1998, which corresponds to an El Niño. It is estimated that it takes a coral reef 30–100 years to recover from a single bleaching event. Because so many bleaching events have been occurring, it could take up to 500 years before the corals return to their normal levels.

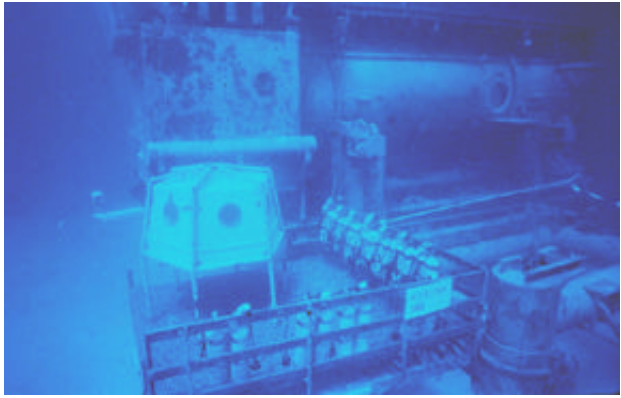

	
Courtesy of Paige Gill, Florida Keys National Marine Sanctuary	Courtesy of G. P. Schmahl, Florida Keys National Marine Sanctuary
Black band disease on coral	Fungal disease on sea fan

There are several diseases that also weaken the health of corals and may cause them to die. These diseases affect the polyps, the living part of the corals. Sometimes the disease is preceded by a bleaching phase. Most of these diseases are named for their appearance. For instance, one form is called black band disease, because the stony reef coral it infects develops a black band of dying coral polyps. The number of cases of coral disease seems to be on the rise. In 1996, 25 research stations reported disease. The following year, 97 research stations reported cases.

One possible source of coral disease is the runoff of water from adjacent agricultural areas. Runoff often contains high concentrations of nitrogen, an important nutrient for plants and algae. Increase in nutrients can cause algal blooms that deplete oxygen and block sunlight.

What is being done to study and restore the reefs of Florida Keys National Marine Sanctuary

Studying why coral becomes bleached or diseased poses many obstacles, the main one being access. Conventional diving allows scientists access to the reef for only a few hours a day. Longer dives require a longer time for divers to decompress as they rise to the surface. The research laboratory *Aquarius* has helped solve this problem.

	
Courtesy of P. Auster, OAR/National Undersea Research Program, NOAA Photo Library	Courtesy of D. Kesling, OAR/National Undersea Research Program, NOAA Photo Library
<i>Aquarius</i> at Conch Reef, Key Largo, Florida Keys National Marine Sanctuary	<i>Aquarius</i> aquanauts discuss dive plans during coral-feeding study.

The *Aquarius* is an underwater laboratory located in 18 meters (60 feet) of water about 5.6 kilometers (3.5 miles) offshore in Florida Keys National Marine Sanctuary. Scientists live in the *Aquarius* for up to 10 days at a time, using saturation diving. They can spend a longer time in the water without the lengthy decompression process each day. The *Aquarius* is owned by the National Oceanic and Atmospheric Administration (NOAA) and operated by the National Undersea Research Center at the University of North Carolina at Wilmington.


Courtesy of John Halas, Florida Keys National Marine Sanctuary
Broken elkhorn coral

Artificial reefs

Reefs that have been damaged or broken by careless boaters can often be repaired by replacing broken coral heads in their natural position. Larger breaches in the reef complex can be repaired by placing concrete blocks to serve as

a substrate for coral growth. It takes many years for a repaired coral to be fully restored.

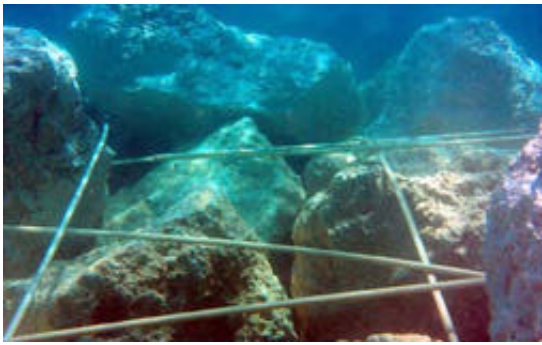

Scattered among the natural coral reef ecosystem are a few artificial reefs. The base of an artificial reef is often an old ship purposely sunk. The USS *Spiegel Grove* was sunk near Key Largo in spring 2002. Similar to shipwrecks, these relics form a substrate for marine organisms. These ships are strategically placed in locations suitable for reef growth. Before being scuttled, the ships are prepared by removing all hazardous materials such as wood, oil, fuel, and loose equipment.

After only a few years coral and algae colonies begin growing and fish take up residence in the structure of the ship. Artificial reefs are popular dive locations.

Restoration

On August 10, 1994, a 47-meter (155-foot) research vessel called the R/V *Columbus Iselin* ran into a coral reef of Florida Keys National Marine Sanctuary. The reef was damaged in four areas. The ship destroyed 345 square meters (3713 square feet) of living coral and 338 square meters (3638 square feet) of older reef. Hurricane Georges moved more rubble, making things worse.

Restoration efforts have begun to repair the damage. Restoration involves rebuilding the reef structure, using limestone boulders, a rebar lattice, and special poured cement. Special arrangements of rocks are used so that coral polyps are encouraged to settle and grow. Some of the damaged corals could be saved and reattached with cement. Healthy corals from other areas were directly transplanted to the site. The University of Miami, which owned the boat, had to pay almost \$4 million in fines to help offset the restoration costs.

	
Courtesy of Florida Keys National Marine Sanctuary	Courtesy of Florida Keys National Marine Sanctuary
A lattice of rebar holds boulders in place before concrete is poured to stabilize the structure.	Coral is transplanted on top of the newly restored reef base.

Protecting the reefs

Some areas within Florida Keys National Marine Sanctuary have special designations such as "research only" or "no-take" (which means no fishing or collecting). These designations help preserve the critical habitats and species in the ecosystem by changing how the area is used. The Tortugas Ecological Reserve was recently protected as an ecological no-take reserve.

The Gulf Stream has been used as a shipping route for centuries, and commercial transport ships continue to pass through the Florida Keys. Restrictions on international shipping is helping protect the reefs. No-anchoring zones provide protection from heavy ship anchors in coral reefs. Shipping lanes have been changed to direct traffic away from sensitive areas.

Florida Keys National Marine Sanctuary was designated an "area to be avoided" in 1990. Designation as a "particularly sensitive sea area" would also change shipping routes. Such designations must be approved by the organization that controls international ocean shipping traffic. Today, only two areas are considered "particularly sensitive sea areas," and both contain coral reefs. These areas are the Great Barrier Reef of Australia and the

Sabana-Camagüey Archipelago in Cuba.

THE DEBATE

Before making decisions that affect an ecosystem, it is important to gather information from a variety of sources. Below are the views of several individuals or groups that have an interest in the future of Florida Keys National Marine Sanctuary. After each quote the hyperlink goes to the original source of the quote. Refer to these sites for more information.

Use the information provided to decide where you stand on this debate.

DEBATE: Should more restrictions limit activities on and around coral reefs?

People who oppose restrictions on waters near coral reefs

Vacation boater at the Florida Keys

"Boats can be used safely around the reefs if you learn to read the water. Looking at the color of the water can tell you when you are too shallow or near a reef. Recreational use does not damage the reef."

Florida Keys On-line Guide, Boating

"Many boaters do not realize that coral reefs and seagrass beds in the Florida Keys can be growing within inches of the water's surface whether they are located close to shore or several miles from shore."

<http://www.florida-keys.fl.us/boating.htm>

Scuba diver

"There are buoys out there to tie the dive boat to, so that we don't have to anchor on a reef. But some of the reefs don't have buoys. We try to be careful with our anchor at those reefs."

Florida Keys Mooring Buoy System

"Reef mooring buoys eliminate the need to drop anchor on fragile coral reefs by providing boaters with a convenient means of securing your boat. Anchors, line and chain can break and damage living coral formations."

<http://www.fknms.nos.noaa.gov/mbuoy/welcome.html>

People who support restrictions on water near coral reefs

Marine Protected Areas of the United States

"The Florida Keys have been a popular destination for explorers, scientists and tourists for centuries. However, their popularity has led to pollution of the marine ecosystem and overuse of resources."

http://mpa.gov/mpadescriptive/cs_fknms.html

U.S. Environmental Protection Agency

"Water quality in most confined waters and some nearshore waters is deteriorating, and this degradation may be affecting biota inhabiting nearshore areas."

<http://www.epa.gov/region4/programs/cbep/fl-nms.html>

Florida Department of Environmental Protection

"Habitat Loss—The Florida Keys are known for the fragile natural systems in this Ecosystem Management area, namely, the coral reefs, vast seagrass meadows, mangrove forests, upland hardwood hammock, and rocky outcrops. These unique habitats are home to numerous endangered and threatened species such as key deer, American crocodile, and tree snails, as well as commercially important species, such as Florida lobster, stone crab, grouper, and other fin fish. These habitats are also very sensitive to impacts from development and over-fishing. There are many efforts toward acquisition and preservation of these habitat types by federal, state, and local governments, as well as private conservation groups."

<http://www.dep.state.fl.us/south/watershed/keys/keys.html>

Questions

- Which side of this debate do you support?
- What scientific evidence supports your position?

- After looking at the evidence, did you change your position? Please explain why.
-

WEB LINKS

Florida Keys National Marine Sanctuary - <http://www.fknms.nos.noaa.gov/>

Access NOAA, *Florida Keys Achieve Historic Protection!* - <http://www.accessnoaa.noaa.gov/jun0702/floridakeys.html>

Aquarius, the World's Only Underwater Laboratory - <http://www2.uncwil.edu/nurc/Aquarius/>

Environmental News Network, *Waste Containment Required in Florida Keys National Marine Sanctuary* - http://www.enn.com/news/enn-stories/2001/07/07252001/keys_44397.asp

Florida Department of Environmental Protection - <http://www.dep.state.fl.us/south/watershed/keys/keys.html>

Florida Department of Environmental Protection, John Pennekamp Coral Reef State Park - <http://www.dep.state.fl.us/parks/district5/johnpennekamp/index.asp>

Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute - http://www.floridamarine.org/features/category_sub.asp?id=1459

Florida Keys and Key West, *The Spiegel Grove Wreck* - <http://www.fl-keys.com/spiegelgrove/spiegelnews.htm>

Florida Keys Mooring Buoy System - <http://www.fknms.nos.noaa.gov/mbuoy/welcome.html>

Florida Keys National Marine Sanctuary - <http://www.florida-keys.fl.us/ntmarine.htm>

Florida Keys National Marine Sanctuary, Clickable Map - http://www.fknms.nos.noaa.gov/research_monitoring/map.html

Florida Keys National Marine Sanctuary, Shipwreck Trail - http://www.fknms.nos.noaa.gov/sanctuary_resources/shipwreck_trail/welcome.html

Florida Keys On-line Guide, Boating - <http://www.florida-keys.fl.us/boating.htm>

Harbor Branch Oceanographic Institute, Florida Reef Restoration - <http://www.at-sea.org/missions/reseed/preview.html>

Marine Protected Areas of the United States - <http://mpa.gov/welcome.html>

Marine Protected Areas of the United States, Florida Keys - http://mpa.gov/mpadescriptive/cs_fknms.html

Naples Daily News, *Black Water: Nitrogen-Rich Agricultural Runoff Possible Black Water Catalyst* - <http://www.naplesnews.com/02/03/naples/d758431a.htm>

National Coral Reef Institute - <http://www.nova.edu/ocean/ncri/>

National Marine Sanctuaries - <http://www.sanctuaries.nos.noaa.gov/welcome.html>

National Marine Sanctuaries, Columbus Iselin Coral Reef Restoration Project - <http://www.sanctuaries.nos.noaa.gov/special/columbus/restoration.html>

United States Coral Reef Task Force - <http://coralreef.gov/>

U.S. Environmental Protection Agency, Coastal Watersheds, *Coral Reefs and Your Coastal Watershed* - <http://www.epa.gov/owow/oceans/factsheets/fact4.html>

U.S. Environmental Protection Agency, *Coral Reef Protection* - <http://www.epa.gov/owow/oceans/coral/>

U.S. Environmental Protection Agency, *Florida Keys National Marine Sanctuary Water Quality Protection Program* - <http://www.epa.gov/region4/programs/cbep/fl-nms.html>

U.S. Environmental Protection Agency, *Treasured Waters: Protecting Our Coastal and Marine Resources* - <http://www.epa.gov/owowwtr1/oceans/treasure/>
